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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,182	02/28/2002	Junji Nakanishi	2185-0623P-SP	4912

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EXAMINER	
LEE, SIN J	

ART UNIT	PAPER NUMBER
1752	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/084,182	NAKANISHI ET AL.	
	Examiner	Art Unit	
	Sin J. Lee	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-8* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claim 2 is canceled by applicants.

2. In view of the amendment of June 4, 2004, previous objections on claims 8 and 9 are hereby withdrawn.

3. In view of the amendment of June 4, 2004, previous 102(b) rejection on claims 1, 5 and 8 over Padmanaban et al'690 is hereby withdrawn. Padmanaban does not teach or suggest present polymerization unit derived from monomers having an adamantane group.

4. In view of applicants' argument in REMARKS, previous 103(a) rejection on claims 1-6 and 8-9 over Barclay et l'086 in view of Nakamura (JP'852) and previous 103(a) rejection on claims 1-9 over Oomori et al (US'704) in view of Nakamura (JP'852) are hereby withdrawn. As argued by applicants, one of ordinary skill in the art would have no reason to expect that a plasticizer component from a chain scissioning type resist composition as disclosed by JP'852 would provide any satisfactory properties when used in the chemical amplification resist compositions of Barclay'086 or Oomori'704 given the fundamentally different operating mechanisms employed by these two different types of resists.

5. Due to new grounds of rejections, the following rejections are made non-final.

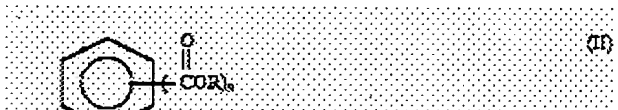
Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1, 3-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barclay et al (US 6,492,086 B1) in view of Padmanaban et al (5,846,690).

Barclay exemplifies in example 8, a positive working composition comprising (A) a copolymer of p-hydroxystyrene and 2-methyladamantylmethacrylate, (B) a photoacid generator, di-t-butylphenyl iodonium camphorsulfonate, (C) a base, tetrabutyl ammonium lactate and (D) a surfactant (col.19, line 1- col.20, line 36). Although not exemplified, Barclay teaches that the taught photoresist composition may further contain other additives such as plasticizers, speed enhancers and anti-striation agents.

Barclay fails to provide specific examples of suitable plasticizers. One of ordinary skill in the art would have been motivated to use any plasticizer which is well-known and conventional in the art of positive type resist materials. Padmanaban (col.5, lines 47-67, col.6, lines 1-2) teaches that adding a plasticizer of the following formula



wherein R is substituted or unsubstituted alkyl having 1 to 20 carbon atoms, and n is a number of 1 or 2.

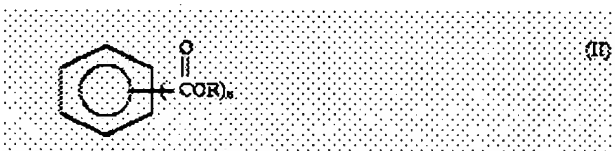
enhances a compatibility between components in the resist composition, improves the adhesion thereof to a substrate and increases a contrast of the pattern formed on the resist composition, whereby the resist composition can exhibit improved resolution and depth of focus. Suitable examples include terephthalic acid-bis-(2-hydroxyethyl)ester and phthalic acid-di-n-octyl ester. It would have been obvious to one skilled in the art to use *phthalic acid-di-n-octyl ester* as Barclay's plasticizer in order to enhance a compatibility between components in the resist composition, improve the adhesion

thereof to a substrate and increase a contrast of the pattern formed on the resist composition, whereby the resist composition can exhibit improved resolution and depth of focus as they are well known in the art. Therefore, Barclay in view of Padmanaban would render obvious present inventions of claims 1, 3-6 and 8.

8. Claims 1 and 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oomori et al (US 2002/0034704 A1) in view of Padmanaban et al (5,846,690).

Oomori exemplifies in example 4 a positive working photoresist composition comprising (1) a copolymeric resin, (2) 3 parts of diphenyliodonium trifluoromethane sulfonate (onium acid generator), (3) 0.16 parts of triethanolamine (organic base), (4) 0.16 parts of phenyl phosphonic acid and (5) 0.1 parts of a fluorosilicone based surface active agent. The said copolymeric resin consists of hydroxystyrene, styrene, 2-methyladamantyl methacrylate and 2,5-dimethyl-2,5-hexanediol diacrylate (p. 0067-0068, 0080-0081). Although not exemplified, Oomori teaches that the taught photoresist composition may further contain other additives such as plasticizers, stabilizers and surface active agents (p. 0054).

Oomori fails to provide specific examples of suitable plasticizers. One of ordinary skill in the art would have been motivated to use any plasticizer which is well-known and conventional in the art of positive type resist materials. Padmanaban (col.5, lines 47-67, col.6, lines 1-2) teaches that adding a plasticizer of the following formula



(II)

wherein R is substituted or unsubstituted alkyl having 1 to 20 carbon atoms, and n is a number of 1 or 2.

to a positive working resist composition enhances a compatibility between components in the resist composition, improves the adhesion thereof to a substrate and increases a contrast of the pattern formed on the resist composition, whereby the resist composition can exhibit improved resolution and depth of focus. Suitable examples include terephthalic acid-bis-(2-hydroxyethyl)ester and phthalic acid-di-n-octyl ester. It would have been obvious to one skilled in the art to use *phthalic acid-di-n-octyl ester* as Oomori's plasticizer in order to enhance a compatibility between components in the resist composition, improve the adhesion thereof to a substrate and increase a contrast of the pattern formed on the resist composition, whereby the resist composition can exhibit improved resolution and depth of focus as they are well known in the art. Therefore, Oomori in view of Padmanaban would render obvious present inventions of claims 1 and 3-8.

Allowable Subject Matter

9. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Neither Barclay in view of Padmanaban nor Oomori in view of Padmanaban teaches or suggests present component (D) of claim 9.

10. Applicants argue that they showed evidence of unexpected advantageous properties in the comparative tests results in the present specification. The Examiner disagrees. First of all, the comparison was not made to the closest prior art. Also, in order to rebut prima facie obviousness, the comparative results have to be *both*

unexpected *and* superior. Padmanaban already teaches that adding his plasticizer *improves resolution*. Thus, applicants' result with respect to resolution is nothing unexpected. Besides, applicants' results with respect to both sensitivity and resolution, are *not superior* compared to comparative examples (for example, there is only 0.01 difference in resolution between examples 1-8 and comparative example 1, and the difference in sensitivity between example 1-8 and comparative example 1 is not big enough to show superiority of present invention. There is no difference in sensitivity between example 9 and comparative example 2). Please see MPEP 716.02(a), 716.02(d), and 716.02(e).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Lee
August 6, 2005

SIN LEE
PRIMARY EXAMINER